APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,287	12/21/2001	Tadashi Tsuyuki	9319S-000308	4058

27572   7590   09/16/2003

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER
DI GRAZIO, JEANNE A

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Applicati n No.	**Applicant(s)**
Office Action Summary	10/032,287	TSUYUKI ET AL.
	Examiner	**Art Unit**	
	Jeanne A. Di Grazio	2871	⊬✓

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>16 June 2003</u> .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>3-6 and 9-38</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>3-6 and 9-38</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)		4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)		5)☐ Notice of Informal Patent Application (PTO-152)
3)■ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> .		6)☐ Other: .

U.S. Patent and Trademark Office

PTOL-326 (Rev. 04-01)   Office Action Summary   Part of Paper No. 8

DETAILED ACTION

Priority

Applicant claims priority to Japanese Patent Application No. 2000-392828 (Dec. 25, 2000).

Status

This communication is responsive to the Amendment of June 16, 2003 and replaces the first communication of March 14, 2003.

By Amendment of June 16, 2003, claims 1, 2, 7, and 8 have been cancelled. New claims 20-38 have been added.

Therefore, claims 3-6, and 9-38 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-6, 9-10, 17, 19, 21, 28, 29, and 34 rejected under 35 U.S.C. 103(a) as being unpatentable over Minoura (US 6,433,847 B1) in view of Abe et al. (US 6,104,460).

Per claims 3, 10, 17, and 19: Minoura has a base (Figure 2(b), substrate 7) and a light reflecting film formed on said base (collectively, 9, 10, and 11) wherein said pattern is formed by aligning at least one of a plurality of convexities and a plurality of concavities (collectively, 9, 10, 11), said convexities and concavities are pyramid shape in plane section (Figures 12 d and e and also Col. 21, Lines 30-38, "equivalent diamonds"), a spatial shape of said convexities or said

concavities along one of two orthogonal axes that pass through said convexities or concavities is different from a spatial shape that extends along the other axis ((Figure 12(c), also Figure 1, inclined plane 9a).

The Examiner interprets Applicant's recitation of "a spatial shape of said convexities or said concavities along one of two orthogonal axes that pass through said convexities or concavities is different from a spatial shape that extends along the other axis" to mean that the pyramidal shape is irregular – meaning that the slopes are of different steepness, or saw-tooth.

Minoura does not appear to specifically point out that the reflective surface has both directional and scattering properties; however, Abe teaches a reflective electrode surface exhibiting both directional and scattering properties. Specifically, Abe teaches that a reflective electrode having a saw-tooth shape exhibits a directional property because of its unevenness (Col. 7, Lines 37-44).

Abe combines the directional and scattering properties in one reflective structure because to do so improves throughput and reduces manufacturing costs by reducing the number of steps needed to separately make a directional and scattering surface (See Col. 2, Lines 7-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Minoura in view of Abe for increased throughput and reduced manufacturing costs.

Per claim 9: Minoura does not appear to specify that the plurality of convexities or concavities are all in the same direction and randomly arranged within a plane; however, Abe has a reflective electrode with convexities and concavities randomly arranged within a plane Figure 5). This configuration contributes to directional and scattering property of the reflector. It would

have been obvious to one of ordinary skill in the art at the time the invention was made to modify Minoura in view of Abe for a directional and scattering reflector that improves throughput and lowers manufacturing costs.

Per claims 4-6, 21, 28, 29, and 34: Minoura has a base (Figure 2(b), substrate 7) and a light reflecting film formed on said base (collectively, 9, 10, and 11) wherein said pattern is formed by aligning at least one of a plurality of convexities and a plurality of concavities (collectively, 9, 10, 11), said convexities and concavities are pyramid shape in plane section (Figures 12 d and e and also Col. 21, Lines 30-38, "equivalent diamonds"), wherein one side of a spatial shape of said convexities bisected by at least one of the two orthogonal axes that pass through said convexities or concavities is asymmetric with the other side thereof ((Figure 12(c), also Figure 1, inclined plane 9a).

The Examiner interprets Applicant's recitation of "wherein one side of a spatial shape of said convexities bisected by at least one of the two orthogonal axes that pass through said convexities or concavities is asymmetric with the other side thereof" to mean that the pyramidal shape is irregular – meaning that the slopes are of different steepness, or saw-tooth.

Minoura does not appear to specifically point out that the reflective surface has both directional and scattering properties; however, Abe teaches a reflective electrode surface exhibiting both directional and scattering properties. Specifically, Abe teaches that a reflective electrode having a saw-tooth shape exhibits a directional property because of its unevenness (Col. 7, Lines 37-44).

Abe combines the directional and scattering properties in one reflective structure because to do so improves throughput and reduces manufacturing costs by reducing the number of steps needed to separately make a directional and scattering surface (See Col. 2, Lines 7-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Minoura in view of Abe for increased throughput and reduced manufacturing costs.

Claims 11, 12, 23, 32, and 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Minoura (US 6,433,847 B1).

Per claims 11, 12, 23, 32, and 35: Minoura has a base (Figure 2(b), substrate 7) and light reflecting film on the base and a plurality of convexities and concavities (pyramid shape) formed and arranged in a reflecting pattern on a surface of a light reflecting film (collectively, 9, 10, and 11).

Minoura does not appear to specifically point out that an amount of light reflected on said reflection pattern, a profile of the amount of light along one of two orthogonal axes that pass through said convexities or said concavities is different from the profile of light along the other of two orthogonal axes; however, the Examiner interprets this limitation to mean that because of the irregular shape of the reflective layer, the profile of amount of light measured with respect to each axis is different. This is due to the irregular shape of the reflective surface- that of an irregular pyramid with slopes of different steepness.

While Minoura does not specifically point this limitation out, it may be implied that the profiles of amount of light are different because of the irregular reflective surface of Minoura as shown in Figure 12(c) for example.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the profile of light based on the irregularity of the reflective surface realizing both black and white display and high contrast ratio (Col. 4, Lines 64-67 and Col. 5, Lines 1-2).

Claims 13, 14, 18, 26, and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Molsen (US 6,573,959 B1) in view of Minoura (US 6,433,847 B1).

Per claims 13, 14, 18, 26, and 37: Molsen has a reflective optical element and associated methods for its manufacture. The reflective structure of Molsen is saw-tooth (Figures 9, 10 a and b). Molsen has the steps of forming a light reflecting film on a surface of a base and employing a mask to form at least one of a plurality of convexities and a plurality of concavities on the surface of the light reflecting film (Col. 9, Lines 9-30). In Molsen, a shape of the mask pattern for the convexities or concavities along one axis of two orthogonal axes that pass through the convexities or concavities is different from the shape that extends along the other axis (Id.) / a shape of one side of a mask pattern of said mask for said plurality of convexities or said plurality of concavities that is bisected by at least one of two orthogonal axes that pass through said convexities or concavities is asymmetric with the other side thereof (Id.).

Molsen does not appear to specify that the convexities or concavities are pyramid shape in plane section; however, Minoura has pyramidal shaped structures (Figures 12 d and e and also Col. 21, Lines 30-38, "equivalent diamonds").

Molsen uses this configuration in part for a multi-color display with a high contrast ratio and that can be easily manufactured (Col. 5, Lines 1-2).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to modify Molsen in view of Minoura for a multi-color display with a high contrast

ratio and that can be easily manufactured.

Claims 15, 25, 27, and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over

Molsen (US 6,573,959 B1) in view of Minoura (US 6,433,847 B1) and further in view of Hoshi

Junichi et al. (JP-10-020290).

Per claims 15, 25, and 38: Molsen does not appear to specify that the mask pattern is

planar teardrop shaped; however, Junichi discloses a reflective device that is cone shaped and its

manufacturing methods (PAJ). In Junichi, the reflective surface is configured as such for a

device having good black display, high contrast, stable performance, and that can be made at a

relatively low cost (PAJ). It would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Molsen in view of Minoura for a reflective device having

good black display, high contrast, stable performance, and that can be made at a relatively low

cost (PAJ).

Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Molsen (US

6,573,959 B1) in view of Minoura (US 6,433,847 B1) and further in view of Abe et al. (US

6,104,460).

Per claim 16: Molsen does not appear to specify that the mask patterns are in the same

direction and randomly arranged within a plane; however, Abe has a reflective electrode with

convexities and concavities randomly arranged within a plane Figure 5). This configuration

contributes to directional and scattering property of the reflector. It would have been obvious to

one of ordinary skill in the art at the time the invention was made to modify Molsen in view of

Abe for a directional and scattering reflector that improves throughput and lowers manufacturing costs.

Claims 20, 22, 30, 31, and 36 rejected under 35 U.S.C. 103(a) as being unpatentable over Minoura (US 6,433,847 B1) in view of Abe et al. (US 6,104,460) and further in view of Hoshi Junichi et al. (JP-10-020290).

Per claims 20, 22, 30, 31, and 36: Minoura has a base (Figure 2(b), substrate 7) and a light reflecting film formed on said base (collectively, 9, 10, and 11) wherein said pattern is formed by aligning at least one of a plurality of convexities and a plurality of concavities (collectively, 9, 10, 11), wherein one side of a spatial shape of said convexities or said concavities are bisected by at least one of the two orthogonal axes that pass through said convexities or concavities is asymmetric with the other side thereof ((Figure 12(c), also Figure 1, inclined plane 9a).

The Examiner interprets Applicant's recitation of "wherein one side of a spatial shape of said convexities or said concavities are bisected by at least one of the two orthogonal axes that pass through said convexities or concavities is asymmetric with the other side thereof" to mean that the shape is irregular – meaning that the slopes are of different steepness.

Minoura does not appear to specifically point out that the reflective surface has both directional and scattering properties; however, Abe teaches a reflective electrode surface exhibiting both directional and scattering properties. Specifically, Abe teaches that a reflective electrode having a saw-tooth shape exhibits a directional property because of its unevenness (Col. 7, Lines 37-44).

Abe combines the directional and scattering properties in one reflective structure because

to do so improves throughput and reduces manufacturing costs by reducing the number of steps

needed to separately make a directional and scattering surface (See Col. 2, Lines 7-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Minoura in view of Abe for increased throughput and reduced

manufacturing costs.

Minoura does not appear to explicitly specify that the shape is teardrop; however, Junichi

teaches the use of a polygonal cone or quadratic cone in the Junichi reflector (PAJ). The

limitations "polygonal" and "quadratic" suggest that the sides of the cones may be unequal and

at least nonlinear. Thus, the shapes in Junichi appear irregular.

Junichi has the recited structures for a reflector that achieves good black display, high

contrast, and stable performance. Furthermore, the reflector can be manufactured at low cost.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Minoura in view of Junichi for a reflector that achieves good

black display, high contrast, and stable performance. Furthermore, the reflector can be

manufactured at low cost.

Claims 24 and 33 rejected under 35 U.S.C. 103(a) as being unpatentable over Minoura

(US 6,433,847 B1) in view of Hoshi Junichi et al. (JP-10-020290).

Per claims 24 and 33: Minoura has a base (Figure 2(b), substrate 7) and light reflecting

film on the base and a plurality of convexities and concavities formed and arranged in a

reflecting pattern on a surface of a light reflecting film (collectively, 9, 10, and 11).

Minoura does not appear to specifically point out that an amount of light reflected on said

reflection pattern, a profile of the amount of light along one of two orthogonal axes that pass

through said convexities or said concavities is different from the profile of light along the other

of two orthogonal axes; however, the Examiner interprets this limitation to mean that because of

the irregular shape of the reflective layer, the profile of amount of light measured with respect to

each axis is different. This is due to the irregular shape of the reflective surface- that of an

irregular pyramid with slopes of different steepness.

While Minoura does not specifically point this limitation out, it may be implied that the

profiles of amount of light are different because of the irregular reflective surface of Minoura as

shown in Figure 12(c) for example.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to vary the profile of light based on the irregularity of the reflective surface

realizing both black and white display and high contrast ratio (Col. 4, Lines 64-67 and Col. 5,

Lines 1-2).

Minoura does not appear to explicitly specify that the shape is teardrop; however, Junichi

teaches the use of a polygonal cone or quadratic cone in the Junichi reflector (PAJ). The

limitations "polygonal" and "quadratic" suggest that the sides of the cones may be unequal and

at least nonlinear. Thus, the shapes in Junichi appear irregular.

Junichi has the recited structures for a reflector that achieves good black display, high

contrast, and stable performance. Furthermore, the reflector can be manufactured at low cost.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Minoura in view of Junichi for a reflector that achieves good

black display, high contrast, and stable performance. Furthermore, the reflector can be

manufactured at low cost.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jeanne A. Di Grazio whose telephone number is (703)305-7009.

The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Robert Kim, can be reached on (703) 305-3492. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703)308-0956.

Jeanne Andrea Di Grazio   Robert Kim, SPE

JDG

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800